REMARKS

In the Office Action dated November 29,2001, the specification and claims have been objected to by the Examiner on formal grounds. Moreover, and the Examiner has rejected Claims 13 and 14 under 35 U.S.C. §112, second paragraph, rejected Claims 1, 2, and 4-14 under 35 U.S.C. §102(b), and rejected Claim 3 under 35 U.S.C. §103(a). By this paper, the specification and claims have been amended to specifically address the grounds of the formal rejections. Additionally, Claims 1, 4, 10, 13, and 14 have been amended to more particularly point out that which the Applicants regard as the invention. Further, Claim 3 has been canceled without prejudice. For the reasons set forth fully below, Claims 1, 2, and 4-14, as now amended, are considered to be allowable.

Applicants' invention is directed to a fuser member including a core and a layer overlying the core, the layer including a fluorocarbon random copolymer, a curing agent which cures the fluorocarbon random copolymer, the cured fluorocarbon random copolymer having subunits of:

$$—(CH_2\,CF_2)x—,\ —(CF_2CF(CF_3))y—,\ \text{or}\ —(CF_2\,CF_2)z—,$$

wherein

x is from 30 to 90 mole percent,

y is from 10 to 70 mole percent,

z is from 0 to 34 mole percent;

x + y + z equals 100 mole percent.

The layer further including a particulate filler having aluminum oxide, having a total concentration in the layer of from 10 to 140 parts by weight per 100 parts of the fluorocarbon random copolymer, and alkaline earth metal oxides or alkaline earth metal hydroxides or combinations thereof; and siloxane polymer comprising one or more curable, silanol-terminated, polyfunctional poly(C1-6 alkyl)siloxane polymers. The concentration of aluminum oxide particulate filler is an important aspect of Applicants' invention, which has not been shown or described in the prior art.

Claims 13 and 14 have been rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicants regard as the invention. The

Examiner is specifically critical of the manner in which the ranges expressed in the respective claims are presented. However, the Examiner has kindly offered guidance as to how the rejection could be overcome, and the Applicants have amended Claims 13 and 14 in the specified manner. Accordingly, this rejection of Claims 13 and 14, as now amended, is respectfully considered to no longer be proper, and should be removed.

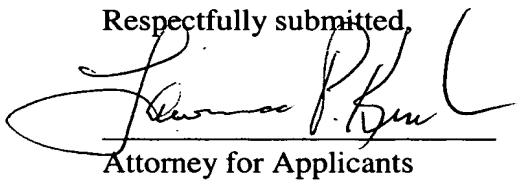
Claims 1, 2, and 4-14 have been rejected under 35 U.S.C. §102(b) as being anticipated by Chen, et al. (U.S. Patent No. 5,582,917), and Claim 3 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Chen, et al. (U.S. Patent No. 5,582,917) in view of Chen, et al. (U.S. Patent No. 5,547,759). The patent to Chen, et al. (U.S. Patent No. 5,582,917) has been cited to teach a fuser member including, *inter alia*, the addition of aluminum oxide. However, as conceded by the Examiner, the Chen, et al. (U.S. Patent No. 5,582,917) reference is silent as to the amount of aluminum oxide that may be used. The amount of aluminum oxide , as noted above, is an important aspect of the Applicants' invention, and as such has been added to independent Claim 1 as a specific limitation (Note: the amount of aluminum oxide was previously recited in Claim 3 which has now been cancelled without prejudice). The Examiner has cited Chen, et al. (U.S. Patent No. 5,547,759) as teaching the addition of aluminum oxide to provide effective results for added strength and abrasion resistance, in a suitable concentration, which would be obvious to one of ordinary skill in the art, thereby making the Applicants' invention obvious. However, the specific range of added aluminum oxide according to the Applicants' invention, as now particularly claimed, is for the purpose of improving release characteristics for a silicone-containing composition. As clearly shown in the tables of the instant specification, the range for addition of aluminum oxide to yield superior release properties is in the specific range now recited in Claim 1 as amended. Therefore, the teachings of Chen, et al. (U.S. Patent No. 5,547,759), which are directed to aluminum oxide addition to a fluoroelastomer, not containing silicone, for a different purpose, do not teach the claimed range of the Applicants' invention, and could not in any way be used to render the Applicants' invention of aluminum oxide addition in a specific range obvious to one of ordinary skill in the art. Thus, it is respectfully submitted that there is no teachings in the prior art that would

render the Applicants' claimed invention obvious to one of ordinary skill in the art. As such independent Claim 1, as amended, and Claims 2 and 4-14 dependent thereon, patentably distinguish over the cited prior art, or any other art known to the Applicants, and should now be allowed.

Applicants are not aware of any additional patents, publications, or other information not previously submitted to the Patent and Trademark Office which would be required under 37 C.F.R. 1.99.

As now presented, this application is believed to be in condition for favorable reconsideration and early allowance, and such actions are respectfully requested. If, upon considering the content of this paper, the Examiner concludes that there are open issues which remain, please contact the undersigned so that an interview may be arranged to resolve such issues.

Respectfully submitted,



Attorney for Applicants
Registration No. 24,637

Lawrence P. Kessler/DN
Rochester, NY 14653-7103
Telephone: (585) 253-0123
Facsimile: (585) 726-0894

Version With Markings To Show Changes Made

In the Specification:

The paragraph beginning on page 6, line 17, has been amended as set forth below:

These objects are achieved by a fuser member comprising a core and a layer overlying the core, the layer including a fluorocarbon random copolymer, a curing agent which cures the fluorocarbon random copolymer, the cured fluorocarbon random copolymer having subunits of:

—$(CH_2\,CF_2)x$—, —$(CF_2CF(CF_3))y$—, or —$(CF_2\,CF_2)z$—,

wherein

x is from 30 to 90 mole percent,

y is from 10 to 70 mole percent,

z is from 0 to 34 mole percent;

x + y + z equals 100 mole percent;

the layer further including a particulate filler having aluminum oxide and alkaline earth metal oxides or alkaline earth metal [hydoxides] hydroxides or combinations thereof; and

a siloxane polymer comprising one or more curable, silanol-terminated, polyfunctional poly(C1-6 alkyl)siloxane polymers.

The paragraph beginning on page 7, line 16, has been amended as set forth below:

FIG. 1 shows a cross sectional view of a fuser member 10 which include a fuser roller, pressure roller, oiler donor roller, oiler metering roller, or

pre-conditioning roller, etc. The core 16 is usually metallic, such as stainless steel, steel, aluminum, etc.; however, the core 16 may also be made of a ceramic or plastic. The primary requisites for core 16 materials are that it provide the necessary stiffness, be able to support the force placed upon it, and be able to withstand whatever temperature to which it is subjected. Disposed above the core 16 lies one or more optional intermediate layers 14 which are characterized in the art as cushion layers. The outermost layer 12 is a toner release layer. In the event that a cushion layer 14 is desired, then the outermost layer 12 is disposed directly over the core 16. The outermost layer 12 is the toner release layer, it includes a curing agent and a fluorocarbon random copolymer that is cured by the curing agent, the fluorocarbon random copolymer has subunits of:

—(CH_2 CF_2)x — (vinylidene fluoride subunit ("VF_2")),

—($CF_2CF(CF_3)$)y— ([hexefluoropropykene] hexefluoropropylene subunit ("HFP')), and

—(CF_2 CF_2)z—(tetrafluoroethylene subunit ("TFE"))

wherein

x is from 30 to 90 mole percent,

y is from 10 to 70 mole percent,

z is from 0 to 34 mole percent; and

x + y + z equals 100 mole percent;

the layer further including particulate filler having aluminum oxide; and

a siloxane polymer comprising one or more curable, silanol-terminated, polyfunctional poly(C1-6 alkyl)siloxane polymers.

The paragraph beginning on page 12, line 23, has been amended as set forth below:

The fuser member is constructed forming a toner release layer on a overlying an optional base cushion provided on a core comprising the steps of:

(a) providing a core;

(b) providing a mixture having:

(i) a fluorocarbon random copolymer having subunits of:

—(CH_2CF_2)x—, —($CF_2CF(CF_3)$)y—, or —(CF_2CF_2)z—,

wherein

x is from 30 to 90 mole percent,

y is from 10 to 70 mole percent,

z is from 0 to 34 mole percent;

x + y + z equals 100 mole percent;

(ii) a particular fillers comprising aluminum oxide and additional particulate selected from alkali metal oxides, alkali metal hydroxides, and combinations of alkali metal oxides and hydroxides; and

(iii) a crosslinking agent and a crosslinking accelerator; and a siloxane polymer comprising one or more curable, silanol-terminated, polyfunctional poly(C1-6 alkyl)siloxane polymers, the siloxane polymer comprising at least two different functional siloxane units selected from the group consisting of monofunctional, difunctional, trifunctional and tetrafunctional siloxane units, and creating an interpenetrating network consisting essentially of separately crosslinked polymers, the fluorocarbon random copolymer and the fluorocarbon curing agent forming one crosslinked polymer, and the siloxane polymer forming a second crosslinked polymer; and

(c) applying the mixture to the base cushion and curing the applied mixture to crosslink the fluorocarbon random copolymer.

In the Claims

Cancel Claim 3 without prejudice.

Claim 1 has been amended as set forth below:

1. (Once Amended) A fuser member comprising a core and a layer overlying the core, the layer including a fluorocarbon random copolymer, a curing agent which cures the fluorocarbon random copolymer, the cured fluorocarbon random copolymer having subunits of:

—$(CH_2\,CF_2)x$—, —$(CF_2CF(CF_3))y$—, or —$(CF_2\,CF_2)z$—,

wherein

x is from 30 to 90 mole percent,

y is from 10 to 70 mole percent,

z is from 0 to 34 mole percent;

x + y + z equals 100 mole percent;

the layer further including a particulate filler having aluminum oxide, having a total concentration in the layer of from 10 to 140 parts by weight per 100 parts of the fluorocarbon random copolymer, and alkaline earth metal oxides or alkaline earth metal [hydoxides] hydroxides or combinations thereof; and

a siloxane polymer comprising one or more curable, silanol-terminated, polyfunctional poly(C1-6 alkyl)siloxane polymers.

Claim 4 has been amended as set forth below:

4. (Once Amended) The fuser member of claim 2 wherein the alkaline earth metal oxides or alkaline earth metal [hydoxides] hydroxides or combinations thereof have a total concentration in the layer of from 3 to 15 parts by weight per 100 parts of the fluorocarbon random copolymer.

Claim 10 has been amended as set forth below:

10. (Once Amended) The fuser member of claim 1 wherein x is from 42 to 75 mole percent and y is from 14 to 58 mole percent[,].

Claim 13 has been amended as set forth below:

13. (Once Amended) The fuser member of claim 2 wherein the siloxane polymer includes a polydimethylsiloxane having a number average molecular weight of [between] from about 20,000 to about 300,000 and a polymethylsiloxane comprising monofunctional and tetrafunctional siloxane repeating units and having a number average molecular weight in the range of 1,000 to 10,000.

Claim 14 has been amended as set forth below:

14. (Once amended) The fuser member of claim 1 wherein the siloxane polymer comprises a silanol- or trimethylsilyl-terminated polymethylsiloxane and is a liquid blend comprising about 60-80 weight percent of a difunctional polydimethylsiloxane having a number average molecular weight of about 150,000, and 20-40 weight percent of a polytrimethylsilyl silicate resin having monofunctional and tetrafunctional repeating units in an average ratio of [between] about 0.8-[and]1 to 1, and having a number average molecular weight of about 2,200.

In The Abstract

The Abstract has been amended as set forth below:

ABSTRACT OF THE DISCLOSURE

A fuser member comprising a core and a layer overlying the core, the layer including a fluorocarbon random copolymer, a curing agent which cures the fluorocarbon random copolymer, the cured fluorocarbon random copolymer having subunits of:

—(CH_2CF_2)x—, —($CF_2CF(CF_3)$)y—, or —(CF_2CF_2)z—,

wherein

x is from 30 to 90 mole percent,

y is from 10 to 70 mole percent,

z is from 0 to 34 mole percent;

x + y + z equals 100 mole percent[;].

[ ]The layer further including a particulate filler having aluminum oxide, having a total concentration in the layer of from 10 to 140 parts by weight per 100 parts of the fluorocarbon random copolymer, and alkaline earth metal oxides or alkaline earth metal [hydoxides] hydroxides or combinations thereof; and siloxane polymer comprising one or more curable, silanol-terminated, polyfunctional poly(C1-6 alkyl)siloxane polymers.